RECENT LITERATURE.

Eimer on the Origin of Striped Muscular Tissue.[1]—Prof. Eimer, of Tübingen, endeavors in this treatise to prove that the transverse striping of muscular tissue is due to increased energy of muscular contraction. He refers to the well-known fact that this character is seen in muscles which display the greatest energy, while the unstriped condition is characteristic of muscles of feeble and slow contractility. This is shown to be the case in many animals, some of the most striking illustrations being drawn from the Mollusca. Among the most important observations are those on the muscles of the Anthropoda. The author made the interesting observation that the thoracic muscles of the house-fly are, during the winter season of torpidity, unstriped, while with the advent of active life in spring the cross-striping appears, and is most developed in summer, the period of greatest activity. The various stages of development of the Zwischenscheiben and Mittlescheiben, which are to be seen not only in the same individual but in the same fibrilla, are traced and illustrated. It is also maintained that the longitudinal division of primitive simple muscular masses into fibrillæ is due to longitudinal stress; and still earlier in evolution that muscular tissue is differentiated from homogenous protoplasm by the same agency. These theses are sustained with much plausibility, and they may be regarded as an integral part of Neolamarckian doctrine. Prof. Eimer expresses his results in the following language: "The cross-banding is the permanent expression of contraction waves of the muscle mass caused by nervous stimulus. It appears to be in the fullest sense an acquired and inherited peculiarity."

Beecher's Studies of the Brachiopoda.[2]—This paper is the second of a series in which are published the results of a combined study of young and adult, living and fossil brachiopods. The facts and conclusions reached are of great interest, and are highly important to a clear understanding of the group.

[1]Die Entstehung und Ausbildung des Muskelgewebes insbesondere der Querstreifung derselbens als Wirkung der Thatigkeit betrachtet; von G. H. Th. Eimer. Separat Abdruck aus Zeitschr. f. wissensch. Zoologie, liii, Suppl. Leipzig, 1892.

[2]Development of the Brachiopoda, Part II. Classification of the Stages of Growth and Decline, by Charles E. Beecher (with Plate 1). Am. Jour. Sci., Vol. xliv, Aug., 1892.

The author applies Prof. Alpheus Hyatt's "Classification of Stages of Growth and Decline" to the brachiopods from the developing of the ovum to the old age of the individual. This classification works so well in this new application that it adds strength to it as a system.

Prof. Beecher reviews the existing knowledge of the embryology of brachiopods, rendering very clearly the progressive development of the shell and associated parts. Kutorgina is suggested as a radical of the strophomenoids. A close comparison is made of the reflected "collar" in developing Spirorbis, with the reflected mantle lobes in Cistella. Thecidium is considered as a surviving member of the strophomenoids, which group has previously been considered as extinct.

Important observations are made on the development of the deltidium, in which the author shows that it is primarily a plate formed on the dorsal side of the posterior or pedicle segment of the larva. In later growth the deltidium becomes ankylosed with the ventral valve, which grows around so as to include it. This conclusion is strengthened by collateral proofs of microscopical structure. Deltidial plates, on the other hand, he shows are developed by the unfolding of the ventral mouth lobes at the pedicle area. They therefore properly belong to the ventral valve.

A perforation in the umbo of the dorsal valve in many early articulate types leads to the conclusion that they had an anus. In brachiopods as a whole some features are progressive, others retrogressive. The protegulum[3] or larval shell is mentioned, but is fully discussed in the earlier paper.

Acceleration of development is clearly shown in Discinisca, which in the nepionic stage adopts characters which are first found in the nealogic stage of its ancestor, Orbiculoidea. Nice distinctions are made between characters acquired by inheritance and those adopted by special adaptations to conditions of environment, which latter may appear anywhere in separate genetic series. Postembryonic stages are briefly considered in types of the four orders proposed by the author.

Old age, or the geratologic period in brachiopods, is marked by the thickening of the valves, and may be further indicated by loss of ornamentation and resorption of the deltidium or deltidial plates. In the early forms of each genus and family the species are small, in the culmination they attain a maximum of size; before extinction they again resume a depauperate size and present abundant geratologous and pathologic forms. As such degraded types, Cistella and Gwynia, among brachiopods, bear such relations to the Terebratuloids as Baculites amongst cephalopods do to the Ammonoids.

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[3]Comparable to the protoconch and prodissoconch of mollusks.